AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the

application:

LISTING OF CLAIMS:

1. (currently amended): A symmetric type image filter processing apparatus, which processes image data by a symmetric type image filter composed of N × M kernel coefficients, N and M are odd numbers being 3 or more integers, comprising:

an operating means that multiplies kernel coefficients of ~~one or more columns~~a column on the left or on the right of a center column by column elements of image data corresponding to said ~~one or more columns~~column, and cumulatively adds the multiplied results;

a memorizing means that memorizes ~~operation~~ the sum of the multiplied results generated at said operating means as intermediate data; and

a pixel value calculating means that calculates filtered pixel values of said image data ~~by cumulatively adding~~based on said intermediate data memorized in said memorizing means, wherein

the operating means does not utilize all the N x M kernel coefficients for said multiplication.

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2. (currently amended): A symmetric type image filter processing apparatus in accordance with claim 1, wherein:

said operating means calculates intermediate data in one row of said image data, and

said pixel value calculating means reads out said intermediate data corresponding to the position of each pixel of said image data, and calculates said <u>filtered</u> pixel value by cumulatively adding said read out intermediate data.

3. (original): A symmetric type image filter processing apparatus in accordance with claim 1 or 2, wherein:

said operating means and said pixel value calculating means execute the operation of said multiplication and said cumulative addition by using SIMD commands.

4. (currently amended): A symmetric type image filter processing apparatus in accordance with claim 1, wherein:

the number of pixels in one row of said image data is P (P is a positive integer), and

said operating means multiplies each kernel coefficient of M pieces in each column of { (N + 1) / 2 } columns at said right or left of said center column by each pixel of M pieces in the column direction of said image data and cumulatively adds the multiplied results, by using SIMD commands that are capable of processing data of sequential Q pieces simultaneously, (Q > 1 and Q is a positive integer satisfying the condition P > Q), and executes this multiplying and

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cumulatively adding operation P / Q times, and generates said intermediate data in one row of

said image data.

5. (currently amended): A computer-readable storage medium storing a program for

making a computer work to execute filter processing to image data by using a symmetric type

image filter composed of N × M kernel coefficients (N and M are odd numbers being 3 or more

integers), said ~~program~~the filtering processing comprising:

an operating step that multiplies kernel coefficients of ~~one or more columns~~a column to

the left or to the right of a center column by column elements of image data corresponding to

said ~~one or more columns~~column and cumulatively adds the multiplied results;

a memorizing step that memorizes ~~operation~~the sum of the multiplied results generated at

said operating step as intermediate data; and

a pixel value calculating step that calculates _filtered_ pixel values of said image data ~~by~~

~~cumulatively adding~~based on said intermediate data memorized at said memorizing step~~.~~,

wherein in the operating step, all the N x M kernel coefficients are not utilized for said

multiplication.

6. (currently amended): A computer-readable medium storing a program for making a

computer work to execute filter processing to image data in accordance with claim 5, wherein:

said operating step calculates intermediate data in one row of said image data, and

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said pixel value calculating step reads out said intermediate data corresponding to the position of each pixel of said image data, and calculates said _filtered_ pixel value by cumulatively adding said read out intermediate data.

7. (previously presented): A computer-readable medium for storing a program for making a computer work to execute filter processing to image data in accordance with claim 5 or 6, wherein:

said operating step and said pixel value calculating step execute the operation of said multiplication and said cumulative addition by using SIMD commands.

8. (currently amended): A computer-readable medium for storing a program for making a computer work to execute filter processing to image data in accordance with claim 5, wherein:

the number of pixels in one row of said image data is P (P is a positive integer), and

said operating step multiplies each kernel coefficient of M pieces in each column of { (N + 1) / 2 } columns at said right or left of said center column by each pixel of M pieces in the column direction of said image data and cumulatively adds the multiplied results, by using SIMD commands that are capable of processing data of sequential Q pieces simultaneously, (Q > 1 and Q is a positive integer satisfying the condition P > Q), and executes this multiplying and cumulatively adding operation P / Q times, and generates said intermediate data in one row of said image data.

9. (currently amended): A method for processing image data by a symmetric type image filter composed of N × M kernel coefficients (N and M are odd numbers being 3 or more integers), ~~the method~~ comprising ~~the steps of~~:

multiplying kernel coefficients of ~~one or more columns~~a column on the left or on the right of a center column by column elements of image data corresponding to said ~~one or more columns~~column ~~and cumulatively adding the multiplied results to generate intermediate data~~;

generating intermediate data based on the multiplying;

memorizing said intermediate data; and

calculating filtered pixel values of said image data ~~by cumulatively adding~~based on said intermediate data, wherein

the multiplying does not utilize all the N x M kernel coefficients.

10. (currently amended): A method for processing image data in accordance with claim 9, wherein:

said intermediate data is calculated in one row of said image data, and

said filtered pixel values are calculated by reading out said intermediate data corresponding to the position of each pixel of said image data, and by cumulatively adding said read out intermediate data.

11. (original): A method for processing image data in accordance with claim 9 or 10, wherein:

said multiplying operation and said cumulatively adding operation and said pixel value calculating operation are executed by using SIMD commands.

12. (currently amended): A method for processing image data in accordance with claim 9, wherein:

the number of pixels in one row of said image data is P (P is a positive integer), and

said intermediate data in one row of said image data are generated by P / Q times of said multiplying and cumulatively adding operation that multiplies each kernel coefficient of M pieces in each column of { (N + 1) / 2 } columns at said right or left of said center column by each pixel of M pieces in the column direction of said image data and cumulatively adds the multiplied results, by using SIMD commands that are capable of processing data of sequential Q pieces simultaneously, (Q > 1 and Q is a positive integer satisfying the condition P > Q).

13. (canceled).

14. (previously presented): The apparatus of claim 1, wherein the pixel value calculating means stores the calculated pixel values of said image data in an operation result pixel storing region.

15. (currently amended):   The ~~program~~ computer-readable storage medium of claim 5,

wherein the filtering processing further comprising a step of storing the pixel value calculating

means stores the calculated pixel values of said image data in an operation result pixel storing

region.

16. (currently amended):   The method of claim 9, further comprising ~~a step of~~ storing the

pixel value calculating means stores the calculated pixel values of said image data in an

operation result pixel storing region.